Small Business Innovation Research/Small Business Tech Transfer

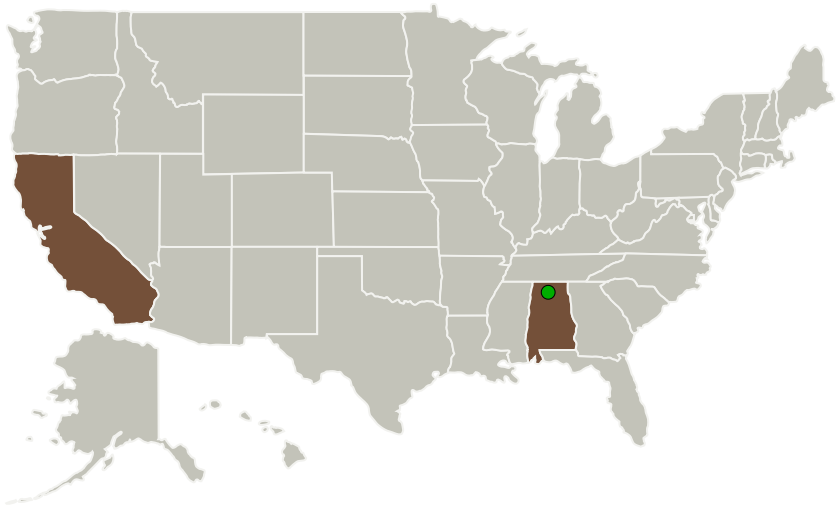
Regeneratively-Cooled, Turbopump-Fed, Small-Scale Cryogenic Rocket Engines, Phase II

Completed Technology Project (2011 - 2013)

Project Introduction

To-date, the realization of small-scale, high-performance liquid bipropellant rocket engines has largely been limited by the inability to operate at high chamber pressures in a regeneratively-cooled environment using on-board pumps for propellant pressurization. Ventions seeks to fulfill this critical need by using a novel fabrication scheme to realize small-scale thrust chambers and turbopumps, and proposes to extend its previously-demonstrated technologies (under DARPA and NASA sponsored efforts) to develop a 3,000lbf, regeneratively-cooled, cryogenic propulsion system with a T/W ratio of approx. 100 and a vacuum Isp up to 355sec.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Ventions, LLC	Lead Organization	Industry	San Francisco, California
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

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Primary U.S. Work Locations	
Alabama	California

Project Transitions

June 2011: Project Start

May 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139394)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Ventions, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

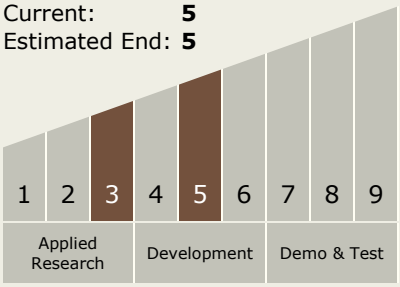
Carlos Torrez

Principal Investigator:

Adam London

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.3 Cryogenic

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System